Chapter 2. Delta Wetlands Project Alternatives

DW PROJECT PURPOSE AND NEED

The purpose of the DW project is to divert surplus Delta inflows, transferred water, or banked water for later sale and/or release for Delta export or to meet water quality or flow requirements for the Bay-Delta estuary. Additionally, the DW project will provide managed wetlands and wildlife habitat areas and recreational uses.

The DW project would increase the availability of high-quality water in the Delta for export or outflow by storing water on two reservoir islands, and would compensate for wetland and wildlife effects of the water storage operations on the reservoir islands by implementing a habitat management plan (HMP) on two habitat islands. As an incidental operation of the habitat islands, water released may be sold or used for the same purposes as the water released from the reservoir islands.

The DW project also includes construction of recreation facilities along the perimeter levees on all four DW project islands; operation of a private airstrip on Bouldin Island; and, during periods of nonstorage, management of shallow water within an inner levee system on the reservoir islands.

The following discussions describe Delta export demands, Delta water quality needs, and environmental flow requirements that DW project water could be used to satisfy.

Delta Export Demands

It is the project applicant's intent that DW project operations would help satisfy Delta export demands by augmenting water supply for exports.

Water sent from northern California to central and southern California or to the Bay Area by the SWP, operated by DWR, and the CVP, operated by the U.S. Bureau of Reclamation (Reclamation), must pass through the Delta. Water is diverted from the Delta by the CVP and the SWP; agricultural users of water from approximately 1,800 local irrigation diversions; and cities such as Antioch and Concord to supply the domestic needs of two-thirds of the state's population and irrigate several million acres of farmlands (DWR 1994). Destinations for DW project water could include the SWP, the CVP, and third-party buyers that use the SWP or CVP facilities for transport of water (a process often referred to as "wheeling").

As described in DWR's California Water Plan Update (Bulletin 160-93), demands for water in California are estimated to exceed dependable supplies. Assuming the levels of Delta water supply availability under improved water management, existing SWP facilities, and SWRCB Water Right Decision 1485 (D-1485), issued in 1978, DWR estimated that California would have an annual deficit in dependable supplies of 2.9-4.9 million acre-feet (MAF) of water by 2020. (DWR 1994.) As indicated under the descriptions of the DW project alternatives below, it is estimated that mean monthly discharges for export under the DW project alternatives would total from 188 thousand acre-feet (TAF) to 302 TAF annually.

Delta Water Quality Needs

It is the project applicant's intent that DW project discharges would increase the supply of high-quality water and freshwater releases for outflow from the Delta.

Water quality considerations have a direct bearing on the quantity of Delta water available for use. Delta waters provide a rich habitat for fish and wildlife and are a major source of supply for uses throughout the state. Drinking water for about 20 million Californians flows through the Delta. Water quality parameters such as temperature; turbidity; and oxygen, mineral, dissolved metal, organic, and nutrient content all affect the usability

of water and therefore affect the total quantity available for specific uses and the overall availability of water supplies in California. Urban water supplies diverted from the south Delta, for example, face the threat of increasing water quality degradation resulting from both salinity intrusion and the presence of organic substances and salinity originating in agricultural drainage from Delta islands or tributary streams. The pressures of a steadily growing population, additional requirements for water to meet environmental needs, and potentially more frequent water shortages pose serious water management and risk management problems for California (DWR 1994).

SWRCB has established specific water quality objectives to protect the uses of water in the Bay-Delta. Many of these objectives relate to salinity. The SWP and the CVP are required to release sufficient fresh water to meet these Delta salinity objectives. However, DWR estimates that increasingly stringent water quality standards for public health protection will affect the continued availability and cost of water supplies (DWR 1994).

Environmental Flow Requirements

DW project water could be used to increase water available to meet environmental flow needs, including fishery flow needs, water needs of freshwater wetlands (and Suisun Marsh), and outflow requirements to meet estuarine salinity objectives.

The Bay-Delta estuarine system has long been an important resource to California. More than 100 species of fish use the Bay-Delta system. Some, such as delta smelt and catfish, are year-round residents and others, such as American shad, are in the estuary for only a few months. Some of the species can live only in relatively fresh water and others can survive only in the more saline parts of the Bay. There are also several fish with intermediate salinity tolerance; these are the true estuarine species.

The health of populations of estuarine species is closely linked to the condition of the estuarine environment. The recurrence of drought (both in 1976-1977 and 1987-1992), combined with increasing human demands on water supply, has shown that fish populations and wetland areas require a water supply that is more dependable than that managed now. As a result of natural and human factors, three runs (or races) of chinook salmon in the Central Valley and Klamath/Trinity River system have shown severe population declines in recent years. Additionally, two fish species that use the Bay-Delta estuary, winter-run chinook salmon and delta smelt, are at such low abundance levels that they are listed under the state and federal Endangered Species Acts. An additional fish species, Sacramento splittail, is currently proposed for listing and other fish species are candidates for listing under the federal Endangered Species Act.

Among the many factors affecting the estuarine environment are the rate and timing of freshwater inflow to the estuary; the quantities of fresh water reaching it seasonally, annually, and over a series of years; and diversions from the estuary for both local and export uses. In the past 50 years, developments in the vicinity of the Bay-Delta estuary, along with numerous local, state, and federal water developments on Central Valley tributary streams, caused changes in the timing and amounts of Delta inflows and outflows during most years.

Water-related factors having the greatest effect on the Bay-Delta estuary are:

- Delta inflow,
- flows from the Sacramento River through the Delta Cross Channel (DCC),
- reverse flows,
- water project diversions and local agricultural diversions,
- agricultural return flows, and
- Delta outflow and salinity.

SWRCB, through its water right process, provides the principal forum for establishing the Bay-Delta's environmental flow requirements. SWRCB reserves jurisdiction in water right permits and periodically holds water right hearings in which interested agencies and parties provide evidence supporting their views regarding the water right, public interest, or public trust impacts of a permitted use. SWRCB then sets objectives and operating criteria to provide balanced protection to all recognized beneficial uses.

DWR calculates that environmental demands for water in California are currently at 28.4 MAF and could increase to 28.8 MAF by 2020 (DWR 1994). The flows that may ultimately be required to meet Bay-Delta environmental needs will not be known until many of the decision-making processes currently underway are finalized (see discussion of CVP and SWP requirements in Appendix 2, "Supplemental Description of the Delta Wetlands Project Alternatives").